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Troubleshooting & Repairing Audio Equipment

Homer L. Davidson

Third Edition

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Introduction

AUDIO COMPONENTS ARE EASY TO MAINTAIN AND REPAIR. Only a few test instruments are needed. Besides, you can be entertained by music while servicing the cassette, CD player, and radio receiver. Also, it can be a lot of fun. This book covers practically all of the electronic players in the consumer electronics entertainment field.

The purpose of this book is to acquaint the experimenter, tinkerer, homeowner, or hobbyist—whether beginner or intermediate—with how each unit works and how to make simple repairs. Check the troubleshooting flowchart in each chapter for easy servicing. Even a TV technician who was only taught how to service a TV chassis can use this book to learn how to repair other audio electronic products.

The book has 13 chapters dealing with repairs on pocket-size cassette stereo players, compact stereo tape decks, boom-box players, deluxe AM/FM/MPX tuners, deluxe amps (amplifiers), automobile stereo cassette players, turntables, compact disc (CD) players, automobile cassette/CD players, telephone answering machines, stereo speakers, and high-power automobile radios.

This is a practical book in electronic servicing. The first chapter of the book tells you how, when, and where to make various tests of transistors and IC. Basic test equipment and how to use it is also covered in Chapter 1. Knowing how to locate the defective component with critical voltage, resistance, and DMM (digital multimeter) tests often allows you to solve most solid-state breakdowns.

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You can build an audio signal tracer and sine-wave generator to locate the defective stages quickly. Ways to identify and replace surface-mounted components (SMD) are discussed in this chapter.

Chapter 2 gives you hints and tips on servicing compact cassette portable players. In addition to speed problems, simple sound problems are also thoroughly explained. Find out how to signal trace the audio stages with this chapter. Troubleshooting the recording circuits in microcassette and compact cassette players is detailed in Chapter 3. Chapters 4 and 5 discuss how to repair AM/FM/MPX and amplifiers. At the end of Chapter 4, you can find out how to service the boom-box cassette player with actual case histories. Chapter 6 details repairing deluxe amplifiers and building a speaker load box. Checking the audio circuits without a schematic is also found in this chapter. How to service the auto stereo cassette is found in Chapter 7, with maintenance of phonograph turntables found in Chapter 8.

Chapters 9 and 10 describe how high-fidelity compact-disc (CD) players work at home and in automobiles. Also find out how to check the turntable disc and CD changer in the trunk of the car. Troubleshooting the various sections with the oscilloscope and critical adjustments often solves difficult repair problems in compact-disc players. Several different waveforms will help you to repair the various CD circuits.

Telephone answering machines are now used in homes, offices, and businesses. How they work, electronic and mechanical problems, and how to solve those problems are covered in Chapter 11. Chapter 12 delves into how to check and replace the stereo speakers.

Steps to install, maintain, and repair those latest high-power automobile radios and sound systems are detailed in Chapter 13. How to connect various speakers to high-powered amps is found in this chapter. The recent and updated names and addresses of most manufacturers in the electronics entertainment field covered in this book are listed in the appendix.

Besides providing new circuits and data, new photos and schematics are found throughout this third edition. Yesterday, the transistor was seen in every sound product; today, the IC has taken over. New audio case histories are found in most chapters.

Now let's begin!

Electronics

"Homer Davidson has done it again. Here are all the insider's secrets to repairing tape decks . . . portable stereos, and many other common entertainment devices."

—*Electronics Handbook* on a previous edition

All-inclusive advice on a wide range of audio equipment malfunctions—with foolproof diagnostic techniques, step-by-step repair instructions, and helpful case studies

In this best-selling reference, the incomparable Homer Davidson gives you the benefit of his extensive experience diagnosing and repairing audio equipment. No matter what the problem, you'll find indispensable advice and detailed instructions for solving it in this highly visual guide—now completely updated to cover the latest makes and models of today's popular audio devices. Helpful flowcharts have also been added throughout the book.

You'll find concise explanations of how each device operates, detailed descriptions of malfunctions, and specific advice on repairs for:

- Tape decks
- CD players
- Tuners and amplifiers
- Speakers
- Boom boxes
- Portable stereos
- Car stereos
- Telephone answering machines

. . . turntables and other audio devices. You will also get practical information on using test equipment, troubleshooting, and much more.

A volume in the *TAB Electronics Technician Library*

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